CLAIMS

What is claimed is:

1. An antibody directed to a conformational epitope of a protein of Hepatitis C virus.

2. An antibody directed to a conformational epitope of E1 protein of Hepatitis C virus.

3. An antibody directed to a conformational epitope of E2 protein of Hepatitis C virus.

4. The antibody of claim 1 wherein the dissociation constant (K_D) of the antibody for its epitope is less than 10^{-7} M.

5. The antibody of claim 1 wherein the binding constant (K_D) of the antibody for its epitope is less than 10^{-8} M.

6. The antibody of claim 1 wherein the binding constant (K_D) of the antibody for its epitope is less than 10^{-9} M.

7. The antibody of claim 1 wherein the binding constant (K_D) of the antibody for its epitope is less than 10^{-10} M.

8. An antibody directed to a conformational epitope within amino acids 411 through 644 of E2 protein of Hepatitis C virus 1b.

9. An antibody directed to a conformational epitope within amino acids 470 through 644 of E2 protein of Hepatitis C virus 1b.

10. An antibody directed to a conformation epitope within amino acids 470 through 644 of E2 protein of Hepatitis C virus 1b and exhibits minimal cross-competition with the antibodies of claim 8.

11. An antibody directed to an epitope within amino acids 644 through 661 of E2 protein of Hepatitis C virus 1b.

12. An antibody directed to the epitope recognized by CBH-2, -4D, -4B, -4G, -5, -7, -8C, -8E, -9, -11, or -17.

13. An antibody wherein the antibody competes with CBH-2, -4D, -4B, -4G, -5, -7, -8C, -8E, -9, -11, or -17 for binding to its epitope.

14. The antibody of claim 3 wherein the antibody inhibits binding of HCV E2 to CD81.

15. A cell line expressing the antibody of claim 1.

16. The cell line of claim 15 wherein the cell line is a B cell line.

17. The cell line of claim 15 wherein the cell line is a human cell line.

18. The cell line of claim 15 wherein the cell line is a mammalian cell line.

19. The cell line of claim 15 wherein the cell line is a eukaryotic cell line.

20. The cell line of claim 15 wherein the cell line is a hybridoma.

21. The cell line of claim 15 wherein the cell line has been transformed with Epstein-Barr virus (EBV).

22. The cell line of claim 15 wherein the cell line has been infected with a virus.

23. The cell line of claim 15 wherein the cell line has been infected with phage.

24. A virus displaying the antibody of claim 1.

25. The antibody of claim 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, or 13 wherein the antibody is a monoclonal antibody.

26. The antibody of claim 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, or 13 wherein the antibody is a human antibody.

27. The antibody of claim 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, or 13 wherein the antibody is a humanized antibody.

28. The antibody of claim 1 wherein the antibody is a mammalian antibody.

29. A pharmaceutical composition comprising the antibody of claim 1 and a pharmaceutically acceptable excipient.

30. A method of treating a patient infected with HCV, the method comprising steps of:
providing a patient infected with HCV or susceptible to HCV infection; and
administering to the patient the antibody of claim 1.

31. A method of treating a patient exposed to HCV, the method comprising steps of:
providing a patient exposed to HCV; and
administering to the patient the antibody of claim 1.

32. The method of claim 30 or 31 wherein the step of administering the antibody comprises administering more than one different antibody.

33. A peptide comprising a conformational epitope of E1 protein of HCV.

34. The peptide of claim 33 wherein the peptide does not contain the full sequence of the E1 protein of HCV.

35. A peptide comprising a conformational epitope of E2 protein of HCV.

36. The peptide of claim 35 wherein the peptide does not contain the full sequence of the E2 protein of HCV.

37. A peptide comprising amino acids 411 through 644 of E2 of HCV 1b.

38. A peptide comprising an amino acid sequence of E2 of an HCV, wherein the amino acids are analogous to amino acids 411 through 644 of E2 of HCV 1b.

39. A peptide comprising amino acids 470 through 644 of HCV 1b E2.

40. A peptide comprising an amino acid sequence of E2 of an HCV, wherein the amino acids are analogous to amino acids 470 through 644 of E2 of HCV 1b.

41. A peptide comprising amino acids 644 through 661 of HCV 1b E2.

42. A peptide comprising an amino acid sequence of E2 of an HCV, wherein the amino acids are analogous to amino acids 644 through 661 of E2 of HCV 1b.

43. A peptide fragment of HCV E2 that contains a conformational epitope.

44. A peptide wherein the peptide is at least 60% identical to a peptide of claim 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, or 43.

45. A peptide wherein the peptide is at least 70% identical to a peptide of claim 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, or 43.

46. A peptide wherein the peptide is at least 80% identical to a peptide of claim 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, or 43.

47. A peptide wherein the peptide is at least 90% identical to a peptide of claim 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, or 43.

48. The peptide of claim 33, wherein the peptide has been chemically modified.

49. The peptide of claim 33, wherein the peptide has been glycosylated.

50. An agent having sufficient three-dimensional structural similarity to an HCV E2 conformational epitope to compete for binding of the epitope to an antibody in the presence of the agent versus in the agent's absence.

51. An agent having sufficient three-dimensional structural similarity to an HCV E1 conformational epitope to compete for binding of the epitope to an antibody in the presence of the agent versus in the agent's absence.

52. The agent of claim 50 or 51 wherein the antibody is selected from the group consisting of CBH-2, -4D, -4B, -4G, -5, -7, -8C, -8E, -9, -11, or -17.

53. The agent of claim 50 or 51 wherein the epitope is the conformational epitope within amino acids 411 through 644 of HCV 1b E2, the conformational epitope within amino acids 470 through 644 of HCV 1b E2, or the epitope within amino acids 644 through 661 of HCV 1b E2.

54. The agent of claim 50 or 51 wherein the agent is a peptide.

55. The agent of claim 50 or 51 wherein the agent is a small molecule.

56. The agent of claim 50 or 51 wherein the agent is a chemical compound.

57. The agent of claim 50 or 51 wherein the agent is an organic compound.

58. The agent of claim 50 or 51 wherein the agent is an inorganic compound.

59. The agent of claim 50 or 51 wherein the agent is a mimotope.

60. A vaccine comprising a peptide fragment of HCV E2 that contains a conformational epitope.

61. A vaccine comprising a peptide fragment of HCV E2 that contains an epitope recognized by the antibody of claim 1.

62. A vaccine comprising a peptide fragment of HCV E2 that contains an epitope recognized by a human monoclonal antibody selected from the group consisting of CBH-2, CBH-4D, CBH-4B, CBH-4G, CBH-5, CBH-7, CBH-8C, CBH-8E, CBH-9, CBH-11, and CBH-17.

63. A vaccine comprising the peptide of claim 33, 34, or 35.

64. A vaccine comprising the agent of claim 50 or 51.

65. The vaccine of claim 60 further comprising an adjuvant.

66. A method of classifying patients infected with HCV, the method comprising steps of:

providing serum from a patient infected with HCV;

measuring inhibition by the patient's serum of binding of an anti-HCV monoclonal antibody to its epitope; and

identifying patient as candidate for administration of a treatment.

67. The method of claim 66, the method comprising additional step of:

administering to the patient an antibody.

68. The method of claim 66, wherein the anti-HCV monoclonal antibody is directed against HCV E2.

69. The method of claim 66, wherein the anti-HCV monoclonal antibody is selected from the group consisting of CBH-2 and CBH-7.

70. The method of claim 66, wherein the step of administering comprises administering an antibody directed to the epitope that is bound by an anti-HCV monoclonal antibody, the binding of which is not inhibited by the patient's serum.

71. A method of detecting HCV infection, the method comprising steps of:

providing an individual;

contacting a body fluid from the individual with a peptide of claim 33 or 35 under suitable conditions for binding of antibody to its antigen; and

detecting the binding of an antibody to the peptide.

72. A method of detecting HCV infection, the method comprising steps of:

providing an individual;

contacting a body fluid from the individual with an agent of claim 50 or 51 under conditions suitable for antibody/antigen binding; and

detecting binding of an antibody to the agent.

73. A method of identifying the genotype of HCV, the method comprising steps of:

providing an individual;

contacting a body fluid from the individual with at least two peptides of claim 33 or 35 under conditions suitable for antibody/antigen binding;

detecting binding of antibody to the peptides; and

analyzing the profile of antibody binding to determine the genotype of HCV.

74. The method of claim 71 wherein the body fluid is blood.

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